

What is claimed is:

1. An osteopontin-derived peptide comprising the amino acid sequence selected from the group consisting of SEQ ID NO: 7; SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO:13, SEQ ID NO:14 and SEQ ID NO: 15..
2. The peptide of claim 1 regulating cellular development.
3. The peptide of claim 2, wherein the peptide binds to at least one receptor on a cell surface.
4. The peptide of claim 3, wherein the receptor(s) is an integrin.
5. The peptide of claim 4, wherein the integrin(s) is selected from the group consisting of $\alpha_v\beta_3$, $\alpha_v\beta_5$, $4\beta_1$, $2\beta_1$, VCAM, ICAM, CD44, V_3V_x .
6. The peptide of claim 3 wherein the cell is selected from the group consisting of osteoprogenitor cells, tumor cells, macrophages, periosteal cells, endothelial cells, epithelial cells, eosinophils, stem cells, limited potential precursor cells, precursor cells, committed precursor cells, and differentiated cells.
7. The peptide of claim 6, wherein the peptide does not contain an RGD motif.
8. An implant, comprising;
a material suitable for use *in vivo* within a subject in combination with an osteopontin-derived peptide forming an osteopontin-derived peptide containing implant.
9. The implant of claim 8 wherein the osteopontin-derived peptide is non-covalently attached to the material.
10. The implant of claim 3 wherein the non-covalent attachment of the osteopontin-derived peptide to the material is via a divalent ion bridge or via coating of a mucopolysaccharide on to the material.
11. The implant of claim 8 wherein the osteopontin-derived peptide possesses a cell attachment activity.
12. The implant of claim 10 wherein the osteopontin-derived peptide comprises an amino acid sequence selected from the group consisting of

VFTPVVPTVDTYDGRGDSVYGLRSKSKFRRP (SEQ ID NO: 7);
RSRRATEVFTPVVPTVDTYDGRGDSVYGLRSKSKFRRP (SEQ ID
NO: 8); and acetyl-
RSRRATEVFTPVVPTVDTYDGRGDSVYGLRSKSKFRRP (SEQ ID
NO:15).

13. The implant of claim 8 comprising:

a releasable form of phosphorylated osteopontin or an active fragment thereof or a peptide derived therefrom in combination with titanium suitable for use *in vivo* within a subject.

14. The implant of claim 13 wherein the titanium implant is a dental implant.

15. A method of coating an implant with an osteopontin or an active fragment thereof or a peptide derived therefrom comprising:

attaching osteopontin or an active fragment thereof or a peptide derived therefrom to a surface of an implant,

wherein the osteopontin or an active fragment thereof or a peptide derived therefrom is attached to the surface of the implant such that it is releasable from the surface upon implantation into a subject.

16. An osteopontin containing cell recruitment system comprising:

a releasable osteopontin or a fragment thereof or a peptide derived therefrom in a form which provides a gradient; and

an implant forming a cell recruitment system in the proximity of the implant;

wherein the implant is targeted for cell recruitment by a gradient of osteopontin which forms in the proximity of the implant.

17. A method for inducing new tissue formation in a subject at a site where tissue formation is needed comprising:

adding osteopontin or a fragment thereof or a peptide derived therefrom to a subject at a site where tissue formation is needed, wherein the osteopontin or a fragment thereof or a peptide derived therefrom induces new tissue formation about the site.

18. A method for promoting cell differentiation, comprising
administering to an animal or human a therapeutically effective amount of a
peptide wherein the peptides bind to cells and produce developmental
changes in the cell.

Patent Application
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